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ABSTRACT

As schools begin to form partnerships with industry, many of the differences in the cultural values of each institution have not been explored or considered within the partnership agreements. A lack of knowledge and preparation about cultural differences between the partners can lead to unintended consequences. As teachers begin to work in industry through school partnerships, such as the "Valued Instructional Program" in Minnesota, the strong residue of traditional industrial cultural values and the current upheaval caused by societal and economic forces acting upon industry may subtly influence their conceptions of and confusion about industrial goals, educational goals, and classroom practice. In preparing for partnerships, the history of industrial goals, management, and values should be considered. Such influences as Frederick Taylor's ideas about scientific management are pervasive, and new influences such as a focus on external competition, deregulation, and new technology are also active in the industrial culture. Teachers going into industry as industrial trainers for the first time may be influenced by the pay scales and treatment, not realizing that for industrialists, they are a supply of cheap labor. Teachers returning to the classroom may dispense with teaching the "nice to know" in order to facilitate a fit between students and industry, at the expense of students' personal development. Although educators and industrialists have a great deal to learn from each other in solving the problems of industry and education, they must be sure that the exchange is really beneficial to all--teachers, industrialists, and students. (26 references) (KC)

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Influences of the Industrial Culture on a Partnership Program, Teachers, and Curriculum

As schools begin to form partnerships with industry, many of the differences in the cultural values of each institution are not explored or considered within the partnership agreements. A lack of knowledge and preparation about cultural differences between the partners can lead to unintended consequences in either environment. Industry in the United States is in a critical period. It could evolve from a hierarchical management structure emphasizing the deskilling of work and management control to a number of complex management structures involving either more control or the cooperative management techniques suggested by the literature of human relations and organizational culture.

Industrial management and culture creates values which are often hidden from participants' view. As teachers begin to work in industry through school partnerships, the strong residue of traditional industrial cultural values and the current upheaval caused by societal and economic forces acting upon industry may subtly influence their conceptions of and confusion about industrial goals, education goals, and classroom practice. Concepts from an ideology of technocratic rationality can be imported subconsciously by teachers into the classroom through their exposure to and lack of understanding of corporate values. For example, in the "Valued Instructional Program" (VIP) teachers are employed to work as industrial trainers during the summer months. The industrial approach to training, which is conducted for the goal of getting a job done, can lead teachers to believe that separating "nice to know" from "needs to know" is a viable means of planning curriculum for their classrooms, thereby, omitting educational goals which encourage exploration and the personal growth of students. In addition, the teachers who are new to the industrial environment may not understand the tenuous nature of a training program in industry and aspire to leave public education for industrial training. Nor do teachers always understand that, often, their value to the company is to increase productivity by low cost (no benefits and reduced pay scale) labor. Moreover, the desire of industrialists to cooperate with the schools may be fostered by an underlying desire to control the "products" of the schools in order to have a better fit between the needs of the industrial labor force and the graduates of educational institutions. Veteran VIP teachers expressed the belief that one of the benefits of working for industry in the summer is to identify what students need to know and be able to do in order to become employable in industry.

Traditional and current corporate values, management theories, and goals are explored in this paper for the purpose of identifying the values and goals of industry which may be in direct conflict with educational values and goals. Two points of controversy are relevant to the discussion of industrial goals and values: the potential conflict of industrial and educational goals and values and the issue of how to shape society by corporate goals or by shared goals. This discussion is preceded by the historical background of industrial goals, management, and values in this country.

Industrial Goals, Management, and Values

Industrial goals are relatively simple, productivity and profit. They go hand-in-hand towards defining the success of a given industry. High productivity creates profit; efficient productivity improves profit; and profit is the "bottom line" for staying in business. In an effort to maintain productivity and profit, complex systems of management have been created in industry. Early growth of industry and the conditions in the United States helped to create the mechanisms and conditions of industry as we know it today.

Industry in the United States evolved from cottage industries where the skilled mechanic controlled the production process to a system of manufacturing which is controlled by professional managers. It was the development and use of complex machines and the "American System" of manufacturing, the use of interchangeable parts and the organization of work, which helped the United States to join in and propel the industrial revolution and the growth of industry here

(Woodbury, 1973). New machines which took over hand work and forced a reorganization of work processes improved productivity, lowered manufacturing costs, and increased profit .

During the nineteenth century improved manufacturing methods and machines permitted the growth of industry in this country. As factories grew and increased in number labor was scarce and many industries began recruiting a labor force from first, young farm women, and later, foreign countries. Although these groups were often exploited and wages were held to a minimum without benefits, labor retained some control over the efficiency of the production processes. The unique knowledge and skills of mechanics required to work the new machinery enabled them to control the pace of production. Productivity was dependent upon the way in which the skilled technician performed work. During this period, supervision was scarce and when supervision of the technician existed, supervisors were often former technicians (Pollard, 1965). Essentially, factory owners were dependent upon technicians to control the production process and worked closely with technicians to maintain and improve production.

Growth of Management

Faced with the goal of increased productivity due to the desire to expand markets, early twentieth century industrial managers turned to Frederick Taylor and his ideas about scientific management. Taylor and others promised and delivered higher productivity by restructuring the work behavior of countless categories of laborers. This had the effect of restructuring industry by the deskilling of work and the addition of managers now responsible for supervising the production processes of labor (Mumford, 1934; Braverman, 1974; Zuboff, 1984; Alvesson, 1987). The managers who were added were not former technicians, but managers educated in colleges and business schools. Embedded in Taylor's ideas about scientific management was the premise that those who performed labor were unable to manage their own efforts (Zuboff, 1984). Scientific management created language, mechanisms, and values which rapidly took hold and dominate industry today (Braverman, 1974; Wirth, 1983; Alvesson, 1987).

There have been several recent schools of management philosophy which are not associated with Taylorism and scientific management. These schools have focussed on the importance of the human side of managing work, but many of these schools have had only a limited influence on the basic operating procedures of industry (Alvesson, 1987). In addition, many of these schools have only influenced selected segments of management such as reorganization of the work of supervisors as opposed to laborers. Contemporary schools of management philosophy have included the human relations X and Y theories of McGregor (1960); organizational development, an outgrowth of human relations, (Friedlander and Brown, 1974); sociotechnics, an attempt to integrate both the technical and social aspects of an organization (Davis, 1979); and theories of organizational culture which identify what works in successful organizations (Deal and Kennedy, 1982; Peters and Waterman, 1982). While these theories of management have made inroads in scientific management, by no means have they replaced or destroyed the reliance upon the principles of scientific management. Essentially, the recency of these theories has created a period of transition in industry. Established patterns of operating and behaving in industry are now being challenged by managers and employees, creating the management task of attempting to revise industry through top down management while traditional patterns of behavior and values are still operating in industry.

Technology as a Management System

While theories of management vie for the best answer for meeting the industrial goals of productivity and profit, a default management structure is in place in industry. This structure is a result of the way in which industry relies upon and uses technology. The implementation of tools, machines, and processes in order to perform work embeds industry in a technocratic rationality. Essentially, the sequenced processes of technology often organize work. This technocratic rationality relies upon the positivism of an engineering rationality and becomes, by default, a pervasive management system within modern industry. From the early development of the

"American System" of manufacturing the organization of work and workers has been prioritized by the technology which was being used at the time. As new technology is created to increase productivity, ways of managing machines and processes and the way in which people interact with them become another technology of management. For example, when Henry Ford created a moving assembly line in order to improve productivity, workers ceased to waste time transporting parts and products, became tied to a single post, and had increased levels of production required of them. Today, the use of "informating" technology, computers to control production processes, has had similar effects on continuous processing industries such as paper making and food production and businesses such as insurance and banking (Zuboff, 1984). Implementation of computers in industry is largely the responsibility of engineers and computer scientists and this often leads to work being designed from an engineering (human factors engineering) and positivistic perspective. Computers are also implemented by employees who are seeking to improve work processes. In these instances the use of computers is often haphazard with no plan and no attention to values.

Industrialists do have choices about their use of technology. Zuboff (1984) does argue that computers have the ability to inform and could be implemented in such a way as to allow managers and laborers to learn about a larger frame of reference of the operation of the company and to make more decisions. There appears, however, to be a conflict between the traditional values within a company and the possibilities of informating technology. Implementation of computers has at worst, tightened the managerial control of the production process by vastly reducing the number of managers required and providing ever increasing mounds of data about operations and operator responsibilities which can further control labor, and at best, provided a vehicle for more participative management by informing all concerned about the operation which can permit more operators to become decision makers within the organization. Which route a company chooses rests largely upon the values of the managers and engineers of a particular company and the extent to which the key decision makers are aware of and able to articulate their values when it is time to design a computer system. Often, through the inability to assess values, technology as machines, processes, and the organization of work manages by default.

Values

The particular pattern of industrial development in this country did not occur in isolation of societal values. Societal values and the culture which grew within industry are a result of the interaction of the conditions and attitudes of the time. Traditional values in industry which are present today involve the industrial goals of productivity and profit. Values which support those goals have always been and continue to be attractive to industrialists. Values still active in industry today are competition, elitism and exploitation, individualism, and a technocratic rationality with a belief in the technological quick fix (Wirth, 1983; Lazlo,1978).

As a country founded by many religious groups seeking the freedom to practice religion of choice and to participate fully in the government and society to which they belonged, a strong set of religious values influenced early beliefs about work (Bjorkquist, 1988; Burke, 1985, Hofstatder, 1955). Puritan and Calvanist views about the role of hard work in achieving salvation helped to sustain the work ethic in early New England industry. Early industry, due to small size, the apprenticeship tradition, family ownership, simple organization, and the religious values of the time was also inculcated with a value of paternalism. Owner managers worked closely with their employees and sought to provide for their well being. Early mill owners such as the textile mill owners of Lowell, Massachusetts, provided, in their own way, a paternalistic system for the young women they hired. This form of organization and care for employees was common in the early textile and arms industries in New England, but was abandoned when immigrants began to be hired in large numbers. A concern for the social well-being of foreign workers did not exist. After the civil war, industrialists turned to a secular value system, social Darwinism, which supported elitism and their right of domination, exploitation, and, primarily, the value of competition which dominated industry during its period of great growth. (Hofstadter, 1955). Social Darwinists, Hofstadter said:

> were much concerned to face up to the hardness of life, to the impossibility of finding easy solutions for human ills, to the necessity of labor and self-denial and the inevitability of suffering. Theirs is a kind of naturalistic Calvinism in which man's relation to nature is as hard and demanding as man's relation to God under the Calvanistic system. This secular piety found its practical expression in an economic ethic that seemed to be demanded with special urgency by a growing industrial society which was calling up all the labor and capital it could muster to put to work on its vast unexploited resources. Hard work and hard saving seemed to be called for, while leisure and waste were doubly suspect. The economic ethic engendered by these circumstances put a premium on those qualities that seemed necessary for the disciplining of a labor force and a force of small investors. . . Economic life was construed as a set of arrangements that offered inducements to men of good character, while it punished those who were, in Sumner's words, 'negligent, shiftless, inefficient, silly, imprudent.' (p. 10)

Industrialists enthusiastically adopted and applied to society Darwin's biological theories and those of the prominent social Darwinist philosophers. With the concept of natural selection captains of industry could fuel an elitist view and could justify their right to dominate and exploit the lower classes of society as labor in industry. In addition, competition, which was a by product of a growing industrial structure and the profit goal, was supported by social Darwinism. After all, competition within the species led directly to "the survival of the fittest" . In this conservative philosophy the industrial cultural values of competition, elitism, and exploitation prospered.

The predominance of social Darwinism did not go unchallenged. Populists, nascent Marxists, and progressives all reacted to selected elements of social Darwinism. It was the curious historical mix of conservatism and liberalism buttressed by capitalism in the political ideology of the United States which presented a confusing pattern of acceptance and rejection of the tenets of social Darwinism. Although the social Darwinists disappeared from the forefront by the turn of the century, it was not until the Franklin D. Roosevelt administration that a unified liberal ideology was formed (Hofstatder, 1955). Remnants of social Darwinism remain, today, in the subconscious of Americans. For example, the range of attitudes about the need to seek a cure for AIDS displays some remnants of Darwinist tenets such as "the survival of the fittest".

Even though social Darwinists were disappearing from the scene by the turn of the century, they left a legacy of ideas which mutated and influenced ideology in the United States. This legacy and the appearance of Frederick Taylor enabled industrialists to readily employ Taylor's methods for organizing work in order to achieve greater productivity. Taylor's scientific management of work is based upon identifying the most efficient way of performing a job, it is a technology of work where technology can be considered to be a "science of efficient action" (Towers, Lux, and Ray, 1966, p. 43)

> Taylor firmly believed that there was 'one best way of doing a job and this method could be determined only through the scientific study of that job by experts with proper implements...' He saw his theory as providing an 'almost equal division of the work and the responsibility between the management and the workmen.' For Taylor this meant that 'one type of man is needed to plan ahead and an entirely different type to execute the work.' Managers were to analyze, plan and control. The worker's 'equal division' was to do what he was told by management. A mechanic working under Taylor reported that Mr. Taylor told him he was 'not supposed to think; there are other people paid for thinking around here.' (Wirth, 1983, p. 12)

As an industrial engineer Taylor began to apply scientific management to the organization of work and used a technological rationality to control the work process. The application of principles of engineering to the organization of work strengthened technological determinism in industry and created an enduring reliance upon technological solutions for problems with both machines and humans in industry.

Early resistance to Taylor was expressed by the unions and Samuel Gompers, but the increase in productivity created by scientific management techniques and the willingness of management to accept his ideas created an enduring system of management in industry. This system of management did more than any other to separate labor from management. It caused the growth within the ranks of professional management, and it brought technological rationality to industry.

The time of manager and skilled labor working together to solve production problems began to disappear in industry.

Since the implementation of scientific management has deskilled work and dehumanized the work done by people, one may wonder why the trade unions in the United States have not led a stronger protest. Studies of this aspect of corporate culture (Davies and Weiner, 1985) have revealed, again, a unique conservatism present in the United States which has created a cultural exception here. Individualism and a lack of a sense of class solidarity has led trade unions in the United States to pursue a more narrow economic agenda than countries which have a feudal base and a goal of improving the conditions of an entire social class. Once again, the residual effects of social Darwinism and the concept of rugged individualism has influenced the values found in industry. Union leaders have adopted the value of individualism by exhibiting a "what is in it for me" (WIFM) attitude.

These traditional conditions and values still exist in contemporary industry and are often made public through labor and management conflicts such as exist within Eastern Airlines. Moreover, both managers and laborers are so used to operating within this bifurcation of responsibilities that attempts to change these values often lead to confusion within the industrial labor force. Recent problems at General Motors (GM) have precipitated an attempt to alter the corporate culture there. In an attempt to rectify quality and productivity problems, Roger Smith, CEO at GM is attempting to introduce management techniques of the human relations and other contemporary schools of management. This effort often creates confusing messages for employees who are used to traditional values and relationships in industry (Schlesinger and Ingrassa, 1989). Managers and laborers are being called upon to create new ways of working together and to abandon the traditional separation of labor and management.

Traditional values such as competition, elitism, exploitation, and technological rationality still dominate in industry today. A reason for this appears to be that an awareness of corporate values has not always existed within industry. Awareness and study of corporate values are recent phenomena in the language and literature of business (Enz, 1986). Traditional values have formed over a period of years and without much attention. Often, traditional values were a by-product of the quest for meeting the goals of productivity and profit, the major goals of industry, leading not to strong company culture, but to the default values of competition, elitism, exploitation, and technological rationality throughout industry.

Changes in Modern Industry

Modern industry in the United States is in the midst of change due to sagging rates of productivity and a growing inability to compete with the quality of foreign products (Reich, January,1989). As industrialists seek to remedy this situation, many avenues are being explored. Emphasis on external competition rather than internal competition, new management techniques and attempts at restructuring corporate values, a quest for government deregulation, and the use of technology, are some of the many ways in which industrialists are attempting to resolve their current problems.

Focus on External Competition

The flood in the market of the United Sates by foreign products has created a shift in industry from internal competition within specific companies to a focus on external competition. While external competition has always been a factor in striving to meet profit goals, often competition has focused on internal productivity factors, pitting department against department and employee against employee in industry. Loss of market shares to foreign competitors in the free market of the United States has forced industry to compete against foreign competitors in an unprecedented fashion (Blackford and Kerr, 1986; Reich, January, 1989). This has caused industrialists to take a new look at their operations and seek to improve productivity within. In this effort, traditional models of working have been questioned and managers have studied those management techniques which have been successful for foreign industries. In particular, the successful techniques of the

Japanese, one of the most threatening competitors, have attracted much attention from industrialists in the United States.

Japanese management techniques, stemming from the recommendations of Demming, have been studied and introduced in the United States. These techniques involve creating a new corporate culture based upon cooperation towards corporate goals and rely upon techniques such as quality circles. The bifurcation of responsibilities between managers and labor created by Taylorism is being questioned through the implementation of new management techniques associated with cooperation. Although aware of the Japanese success with a cooperative management style, few managers in the United States have made a serious commitment to support such an effort.

New Management Techniques and Restructuring Corporate Values

Recent management literature has seen an increase in theories which support the involvement of the labor force in the management of work. Experiments in foreign and domestic industrial settings have been conducted by management and sociotechnical theory is one of the most recent theories of management to emerge. Sociotechnical theory, "holds that a basic issue at stake is whether the values of our democratic traditions can be made operative in our economic institutions as a means of renewal" (Wirth, 1983, p. 23). This theory is put into practice in industry in programs such as GM's Quality of Work Life (QWL) which was instituted in response to a general deterioration of labor and management relations during the 1970's in such plants as Lordstown, Ohio and Tarrytown, New York. Essentially, the QWL program has attempted to increase worker participation in decisions about the operation of the production processes. Ultimately, this sociotechnical management technique attempts to fit jobs to people, the opposite of the Taylor approach of fitting people to jobs.

Recent management theories were born out of the seventies when many segments of society, youth, women, minorities, and labor were struggling for identity and power. As these theories have been applied in industry, cultural values and attitudes have had to be considered. Supervisors were not used to receiving advice from employees and employees were not used to offering suggestions for improvement. For example, during the early eighties Eastern airline employees fought for and initiated employee management participation programs. While those programs were deemed successful by many, subsequent sale of Eastern to Texas Air has introduced a traditional management philosophy which has eliminated all employee participation in making decisions. For companies now attempting to make a cultural change, problems remain. Hourly workers at GM while aware of the goals of the QWL program give mixed reviews of its success. Both managers and laborers show evidence of traditional values and patterns of acting when problems arise (R. Butler and W. Valentine, personal communication, February 15, 1989). Industry as a societal institution has by no means fully accepted the sociotechnical theories of management. Often, economic conditions and government policies contribute to the success or failure of industrial policies.

Deregulation

With the Reagan administration a concerted effort to deregulate industry in the United States arrived (Blackford and Kerr, 1986). Essentially, that administration was interested in removing as many government regulations as possible in order to move business and industry as close to a free market operation as could be achieved. The effects of deregulation on the airline industry have been, perhaps, most notable to the public. Competition created by less government interference in ticket pricing and route scheduling spawned, at first, numerous new airlines. Then, as the ability to maintain a competitive edge took over, competition led to the reduction of airlines through merger and bankruptcy. Free market principles now govern a greater share of the airline industry, including creating conditions which allow major airlines to begin to control ticket prices based upon public demand for service and limited access to overcrowded facilities.

While deregulation has improved the ability of airlines to compete, deregulation has also reduced the incentive for managers to use sociotechnical management techniques. The new owner of Texas Air has adopted a traditional attitude about the role of labor and management and it has led to

renewed frustration and rapid deterioration within Eastern Airlines (Nova, January, 1989). Government deregulation policies have the ability to influence many industries in this country in a similar manner. These policies of deregulation bear the influence of the "survival of the fittest" ideology and have changed many aspects of industry, including ethics which instill employee loyalty to the company and company loyalty to employees and the country.

New Technology

New technology, particularly, the informating technology of the computer, has begun to make drastic changes in industry (Zuboff, 1985). In manufacturing industries traditional assembly lines are giving way to flexible manufacturing modules which are set up with several computer controlled machines and one computer operator for the purpose of creating specific parts to be fed to less complex assembly operations. In continuous processing industries, entire processes are being monitored and controlled by computer software which takes readings, reduces voluminous data, and controls the operation with artificial intelligence programming. Businesses involving record keeping are being transformed by the capacity of computer storage and recall of information with the elimination of many clerical, entry level management, and mid-level management positions. Essentially, the hierarchical management structure of many industries is giving way to a flatter management structure. Computers have replaced many managers in industry.

Not only has management structure changed, but also the typical employee who remains has changed. As changes are made in industry, workers who can understand and monitor processes without physical involvement in performing work are needed. In some cases, employees must also be able and prepared to troubleshoot and correct computer controlled processes (Zuboff, 1985). Industry faces a major decisions in the implementation of informating technology. New systems also have the capacity to further deskill and "deintellectualize" work. Computer controlled systems which remove human decision making and increase managerial control or, systems which increase operators' role in policy decision making can be implemented. Based upon these radical changes in technology, industrial managers are calling for more employees who are capable of adapting to the changes wrought by informating technology. Layoffs and an increase in industrial training programs have been two internal responses to this change. Increasingly, industrial leaders are speaking out about the role of public education towards providing the labor force of the future.

Industry and Education Partnerships

One of the traditional ways in which industrialists have attempted to improve productivity and profit has been to control as much of the total process of manufacturing as possible. Ford exemplified this form of oligopoly with the construction fo the River Rouge facilities. He was proud of the fact that raw materials would enter into one end of the facility and completely finished goods would emerge from the other end, giving Ford total control of the production of his automobiles (Lacey, 1986). Industry and education partnerships can easily fall into this form of an oligopoly in a corporate society.

Vocational Education as a Service to Industry

An effort, although not as structured as an oligopoly, has been made to influence the educational system within the United States through the broad based efforts to institute vocational education at the turn of the century. The eventual federal support for vocational education programming enacted with the Smith-Hughes Act of 1917 is an example of the success of industrialists' influence on education. Early private efforts to institute manual training in the 1870's were often funded by industrialists who were interested in being able to hire both workers and managers who were knowledgeable about industrial technology. Some of these early manual training programs evolved into vocational education programs which won the financial support of the federal government. This happened with the help of industrialists who saw a means of training youth to fit into industry as

laborers, unionists who fought to have the public schools control industrial training functions rather than have industrial management be the gatekeepers to skilled jobs in industry, and social activists who believed that vocational education was an appropriate role for the children of the working class.

Current Industrial Overtures

Recent conditions in industry have, once again, caused industrialists to focus on the role of public education. The changes in the character and structure of work are forcing industrialists to seek not only the manually skilled graduate of traditional vocational programs, but a new employee who is familiar with informating technology and the control of industrial processes sans physical involvement in the process and who has the ability to efficiently troubleshoot complex manufacturing and computer systems in order to solve production problems. These people, industrialists have determined, need to possess greater cognitive knowledge, improved problem solving skills, and an increased tendency towards independent action in seeking to resolve problems. These are the requests which industrialists are currently making of public education. One of the current techniques for meeting industry's needs has been the concept of industry and education partnerships.

In recent years there have been many forms of business, industry and educational partnerships. Educational institutions at all levels have participated in a variety of activities such as joint research ventures, the use of industrial training materials in the schools, education-work and industry-education-labor councils, adopt-a-school programs, corporate sponsored foundations, and teacher exchanges (Clabaugh, 1988). As industry extends a willingness to involve educators in these activities, values are shared.

Sources of Potential Conflicts

Often, values in industry conflict with educational values based upon the very different goals of each organization. Barram, vice president for corporate affairs of Apple Computer, Inc. summarizes one of the differences and reveals the ideological basis for those differences,

> Educators appreciate the limitless possibilities of the learning process and want to ensure that individuals have a chance to learn to their fullest. Business usually operates in a world of the survival of the fittest, where getting more done with limited resources is valued. (1988, p. 144

Athough many educators have adopted industrial techniques and these have led to infusing industrial values in schools (Callahan, 1962), there are fundamental differences in the goals of both institutions. Education does not operate to create immediate profit. The goals of education are not as immediate or as readily observable when achieved as profit goals are. It is the difference in the goals which allow educators to adopt different values which may be in conflict with the needs of industry. It is also this difference in goals which makes industrial values often inappropriate in schools. Education may not be served well by the goals of productivity and profit and the values of doing more with less and the survival of the fittest. If this were the case, educators could abandon attempts to provide universal education and merely screen out those students who were unable or unwilling to learn.

When educators, who lack an adequate understanding of the consequences of supplanting industrial goals and values in the classroom, involved in partnerships return to their schools they are liable to implement ideas and techniques which are not compatible with the school's overall mission. When industrialists request that educators improve students' abilities to think creatively and solve problems, those graduates as future employees may no longer be as docile a work force as industrialists may be used to having. The differences in goals values and the potential conflict of these differences point toward a need to plan industry and education partnerships with care so that all members of the partnerships can understand the differences and the commonalities which can lead to improvement in both industry and education.

Clabaugh (1988) cautions readers about education and industry alliances reminding readers that while industrialists are currently interested in acquiring good future employees from educational institutions, educators must not forget that business people and industrialists such as H. Ross Perot

have had questionable ideas about ways to improve education. Given the internal problems in industry, industrial leaders appear to have too many of their own problems to solve. In addition, they may not be adequately prepared and knowledgeable enough to make serious recommendations about educational reform. On the other hand, many educators are not in a position of being able to critique and implement reform in industry due to their own educational problems which need attention and their lack of knowledge and experience about industrial matters.

Considering the changes facing industry and the goals of education, traditional values of industrialists may not serve present or future needs of industry, education, and society. As partnerships are formed, industrialists and educators need to understand the role of traditional values and their effects on both productivity in industry and the goals of education in order to work towards solving current problems. Educators must be aware of the tradition and problems facing modern industry and industrialists must understand the role and purpose of education in this country in order to create ways in which partnerships can be successful for both groups. The benefit of partnerships rests in both institutions profiting from each other.

Questions Facing Future Partnerships

A major question facing industrialists and educators is: Will traditional values remain useful in our future corporate culture? Traditional values already have been singled out by many as a reason for the decline of competitiveness in industry. The presence of traditional values may impede the ability of industrialists to restructure their culture, as well as influence educators who work in industry, and impede future restructuring of the schools. For example, the state of Minnesota has adopted a policy of allowing parents and students to choose to attend any school in the state with no financial penalty other than transportation costs. This is a free market approach to education and bears a value of competition and the survival of the fittest, thereby, creating a new economic policy in education. While the program is too new to assess, some districts are beginning to experience unintended outcomes of the program. A small, but comprehensive school district has lost a significant number of students to a neighboring school district due to not educational quality issues, but the decision of the school board to close one high school in order to consolidate. The school district is beginning to face a loss of state revenue which threatens its existence and accelerates the desertion of more students (Blass & Orwall, 1989). Providing quality education may not be served by employing an economic free market while philosophic and emotional issues remain at the heart of decision making.

What will teachers learn from their industrial experiences in partnerships? As teachers work in industry as a part of partnerships which values will they adopt and transmit to their students? When partnerships are initiated many teachers enter industrial environments with little or no guidance about industry. For many it is the first time that they have worked in industry and they have had little, if any, formal study of industrial processes, programs, and values. As teachers return to their classrooms, will values of competition and the survival of the fittest be an important part of their teaching? A VIP teacher expressed the belief that "if a student is unable to do the job, then fire him." Will they adopt curriculum which prepares students to meet narrow industrial goals? Teachers who have been a part of the VIP program have reported that they have separated the "nice to know from needs to know" information in their own school curriculum and dispensed with such things as teaching long division. Without preparation and guidance, teachers may subconsciously adopt values which are not beneficial for education or industry.

Will teachers apply their new knowledge from industrial experience to their classrooms or will they desert education for industrial jobs? As teachers work in the industrial environment, they will experience a new way of working and interacting. They will work with adults and they will be treated as expert consultants. This treatment is impressive and has led many teachers to believe that there are better rewards and benefits in industry. Recently, an industrial education teacher who had spent over twenty years in the public schools related that the very first time a supervisor had ever actively sought his advice was in a recent summer industrial internship and this was enough to make him consider leaving education. He is not alone, educators who work in industry will be

attracted by industrial wages and culture, as were several VIP teachers who discussed ways to become industrial trainers. What can be done to help teachers to identify ways of implementing their knowledge of appropriate industrial practices in their classrooms? Teachers working in industry are confronted with many new ideas and concepts. Much of this information could be beneficial to students. Without guidance about the information they are gathering the wise use of that information in curriculum, the influence of industry and education partnerships may have unintended consequences in schools.

What should industry gain from partnerships? In the VIP program the company gained positive community public relations and the availability of inexpensive labor to augment the training staff during the summer months. A number of partnerships permit industrialists to increase their work force with public assistance and provide opportunities for industrialists to complete community service. In view of the problems facing modern industry, is this enough? Industry could take the opportunity to learn from educators about fostering creativity and cooperation. Once educators become familiar with the nature of industry, they will have many ideas about how to help industrialists accomplish their goals if industrialists are willing to listen.

As industrialists and educators look towards the future and solving the problems of education and industry in this country, each group has a great deal to learn about each other. Partnerships can be a way of achieving this, if it is understood that initial efforts should concentrate on a mutual educational experience for all members. The foundation of a mutual educational experience, based upon the ability to communicate with each other, could initiate partnerships which would lead to both educators and industrialists improving industry and education in this country.

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